

What Is Claimed Is:

1. A device, comprising:  
a snap-action thermal switch structured in a normally open configuration; and  
a resistance element integral with the snap-action thermal switch and coupled to  
5 an output thereof.
2. The device of claim 1 wherein the resistance element and the snap-action thermal switch share one or more common terminals.
3. The device of claim 1 wherein the snap-action thermal switch is structured having a pair of terminals being mutually electrically isolated when the snap-action  
10 thermal switch structured in the normally open configuration; and  
the integral resistance element is electrically coupled to provide an output on the pair of electrically isolated terminals.
4. The device of claim 3 wherein the pair of mutually electrically isolated terminals are shorted together when the device senses an ambient temperature higher than a  
15 predetermined set point of the snap-action thermal switch.
5. The device of claim 3 wherein the integral resistance element is mounted on an interior surface of the snap-action thermal switch.
6. The device of claim 3 wherein the integral resistance element is mounted on an exterior surface of the snap-action thermal switch.
- 20 7. A thermal sensor, comprising:  
a single-pole, single-throw switch having first and second electrical contacts structured in a normally open configuration, the first contact being movable relative to the second contact;

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an actuator positioned relative to the first electrical contact and responsive to a sensed temperature for spacing the first movable contact away from the second contact; and

an electrical resistor coupled between the first and second contacts.

5 8. The thermal sensor of claim 7 wherein the actuator further comprises a bi-metallic actuator having first and second physical states, the first state being structured to space the first movable contact away from the second contact, and the second state being structured to permit the first movable contact to contact the second contact.

10 9. The thermal sensor of claim 8, further comprising:  
a wiring harness having the single-pole, single-throw switch with the electrical resistor electrically coupled thereto; and  
a plurality of snap-action thermal switches electrically coupled in parallel with the single-pole, single-throw switch.

15 10. The thermal sensor of claim 9 wherein the electrical resistor is integral with the single-pole, single-throw switch.

11. The thermal sensor of claim 10 wherein each of the plurality of snap-action thermal switches electrically coupled in parallel with the single-pole, single-throw switch comprises:

20 a single-pole, single-throw switch having first and second electrical contacts structured in a normally open configuration, the first contact being movable relative to the second contact; and

an actuator positioned relative to the first electrical contact and responsive to a sensed temperature for spacing the first movable contact away from the second contact.

25 12. The thermal sensor of claim 11 wherein one or more of the plurality of snap-action thermal switches further comprises an electrical resistor coupled between the first and second contacts.

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13. The thermal sensor of claim 12, further comprising a means for determining whether each of the plurality of snap-action thermal switches is electrically coupled to the wiring harness.

14. The thermal sensor of claim 12, further comprising a means for determining for  
5 one or more of the plurality of snap-action thermal switches whether the first movable contact is spaced away from the second contact.

15. The thermal sensor of claim 12, further comprising a logic circuit structured to determine for one or more of the plurality of snap-action thermal switches whether the electrical resistor is coupled to the wiring harness.

10 16. The thermal sensor of claim 15, further comprising a logic circuit structured to determine for one or more of the plurality of snap-action thermal switches whether the first movable contact is spaced away from the second contact.

17. A multi-terminal, snap-action thermal switch, comprising:  
a first electrical contact coupled to a first terminal;  
15 a second electrical contact coupled to a second terminal;  
a thermal actuator positioned to separate the first and second electrical contacts at sensed temperatures less than a predetermined set-point temperature; and  
an electrically resistive element coupled between the first terminal and an other terminal.

20 18. The switch of claim 17 wherein the electrically resistive element is coupled between the first terminal and the second terminal.

19. The switch of claim 17 wherein the other terminal to which the electrically resistive element is coupled is a third terminal that is different from the second terminal.

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20. A three-terminal, snap-action thermal switch, comprising:  
first, second and third electrical terminals mounted in a header, the first, second and third terminal being mutually spaced apart and electrically isolated;  
a fixed electrical contact being positioned on the first terminal;  
5 a movable electrical contact being positioned on the second terminal and being biased into electrical contact with the fixed electrical contact;  
a bi-metallic actuator being convertible as a function of temperature between a first state wherein an actuation portion is positioned to space the movable electrical contact away from the fixed electrical contact and a second state wherein the actuation  
10 portion is positioned to permit electrical contact between the movable electrical contact and the fixed electrical contact; and  
an electrically resistive element coupled between the third electrical terminal and one of the first and second electrical terminals.
21. The switch of claim 20, further comprising a housing coupled to the header and  
15 cooperating with the header to encase the fixed and movable contacts.
22. The switch of claim 21 wherein the electrically resistive element is encased within the cooperating housing and header.
23. The switch of claim 21 wherein the electrically resistive element is external to the cooperating housing and header.
- 20 24. A method for determining electrical connections, the method comprising:  
structuring a pair of electrical contacts in a normally open configuration;  
electrically interconnecting an electrically resistive element with at least one of the pair of contacts; and  
detecting a minimum electrical resistance of the electrically resistive element.
- 25 25. The method of claim 24, wherein electrically interconnecting an electrically resistive element includes electrically interconnecting an electrically resistive element with each of the pair of contacts.

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26. The method of claim 24, wherein electrically interconnecting an electrically resistive element includes electrically interconnecting an electrically resistive element with one of the pair of contacts and with an electrical terminal that is electrically isolated from the pair of normally open electrical contacts.
- 5 27. The method of claim 24, further comprising the step of locating said electrically resistive element at the opposite end of said structure from a point of said detecting step.

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